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chamber, be employed for a continued blast in blowpipe analysis.

A very satisfactory test was obtained by attaching the rubber tube of a medium-sized bulb immediately to the blowpipe and using the muscular contraction of the hand instead of the cheeks—much to the relief of the latter. The strength of the blast was surprising. A strong oxidizing flame of about two inches could be secured easily and with a small amount of gas-supply and one filling of the bulb, a steady flame was given for more than a half-minute. A larger size foot-apparatus proved much more powerful. The only difficulty was that it was not easy to make a small reducing flame. For handy and continuous work with difficultly reducible minerals—shortening many processes very much—and in giving the instructor an opportunity to teach during his personal blowpipe instruction, it has considerable practical value, besides doing away with the necessity of bringing the lips into contact with the blowpipe.

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SPECIAL ARTICLES

TRANSPLANTATION OF FORMALDEHYDE-FIXED BLOOD VESSELS

It has been demonstrated that segments of blood vessels may be transplanted successfully from one species of animal into another, *e. g.*, cat or rabbit into dog.¹ Consideration of these results led me to transplant segments of blood vessels that had been preserved in some fixing solution.²

In the case here reported abdominal vena cava of dog preserved in 2.5 per cent. formalin (in 0.9 per cent. NaCl) for 60 days was used. The day before the operation the segment, which was about 0.75 cm. long and 0.5 cm. in diameter, was removed from the formalin

¹ Carrel, *Journal of Experimental Medicine*, IX., p. 226, 1907; Guthrie, *American Journal of Physiology*, XIX., p. 482, 1907; Guthrie, *Proceedings American Physiological Society*, 1907.

² Guthrie, *American Journal of Physiology*, XIX., p. 486, 1907.

solution, washed in dilute ammonia, dehydrated in absolute alcohol and impregnated with paraffine oil. It was interposed between and sutured to the cut ends of the right common carotid artery of a medium-sized bitch. The diameter of the artery was considerably less than that of the venous segment.

The animal made a rapid and uneventful recovery, the wound healing promptly. Clinical examination 22 days after the operation revealed a strong pulsation on the course of the artery at the site of the transplanted segment. The following day the neck was opened and the vessel directly examined. The segment was found to be about 1.5 cm. long and .75 cm. in diameter. It pulsed strongly and the circulation through it was excellent. The walls appeared to be slightly thickened but pliable. In appearance it resembled similar segments transplanted immediately after removal. The wound was closed and the animal returned to its cage. No histological studies have as yet been made, but material is being accumulated for that purpose.

Conclusion.—A segment of dog's abdominal vena cava preserved in formaldehyde for two months and then interposed between the ends of a dog's carotid artery may adequately serve the mechanical function of an artery for more than three weeks.

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A DROUGHT-RESISTANT HICKORY

WHILE investigating the distribution of the hickories in western Arkansas, in behalf of the federal forest service, the writer recently had occasion to note the drought-resistant quality of a little-known member of the genus—a variety probably most closely related to *Hicoria glabra* var. *odorata* Sarg.¹ This form

¹ The form occurring in Arkansas does not seem to conform closely either to *H. glabra* var. *odorata* Sarg. or to *H. villosa* Ashe. The writer, however, strongly disapproves of the publication of any new species, or even varieties in this genus, until the limits of present accepted forms be more accurately established.

occurs in great abundance on the dry flinty hills of the Ozark region, where it is associated with black-jack and post oaks, and with white hickory. Both of these hill hickories are known locally as "bull hickory," there being very little to distinguish them except the foliage. The *glabra* form is the commonest tree in the hills, where it is usually rather small—occasionally twelve inches in diameter and fifty feet high—with very thick, rough bark separating into small squares like the proverbial alligator hide; a rather deep cylindrical crown of small branches, and small, lanceolate, shiny leaflets.

The reproduction of this "alligator hickory" is very good, and is especially abundant on hills which are burned over every year, these being sometimes covered with nearly pure thickets of hickory seedlings and seedling-sprouts. These are injured less by the burnings and recover more readily than the small oaks, afterward, and hence are the sole survivors where fires occur frequently. Examination of the seedlings, however, shows them to be very old, and proves beyond a doubt that their development is very much retarded by the exposure.

The drought-resistance of this hickory is even more remarkable than its fire-resisting powers. After a midsummer drought of eight weeks, both the black-jack and post oaks were in very bad condition, a large proportion of the foliage having turned brown, or the trees killed outright. The hickory, on the other hand, showed only a slight deadening of the leaves in the tops of a few trees. The explanation of this superior drought-resistance is undoubtedly to be found in the small, thick-skinned leaves which characterize the alligator hickory, and which are typical of xerophytic plants. The tendency to form a long, strong tap-root, which all hickories exhibit when growing in well-drained soil, is certainly a very potent factor here.

Such characters as these recommend the alligator hickory for planting in the prairie states, and in dry situations in more humid regions. The high technical value of the wood should in part offset the very slow growth of the tree. It is not to be expected

that the hickory will attain to merchantable size in less than seventy to one hundred years. In that period it should produce a considerable quantity of spoke and handle stock of the very highest quality, if grown on soils of reasonable strength. The planting of hickory on light soils can not be recommended under any circumstances.

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CURRENT NOTES ON METEOROLOGY AND CLIMATOLOGY

KASSNER'S METEOROLOGICAL GLOBES

PROFESSOR C. KASSNER, of the Prussian Meteorological Institute and also of the *Technische Hochschule* in Berlin, has prepared two "meteorological globes" which will be of great help to teachers of geography in general, and especially to those who lay much emphasis on meteorology and climatology. These globes (diameter 34 centimeters) show, for January and for July, the temperature, pressure and winds of the world. The temperature is shown by isotherms for every 2°, and in places for every 4° C.; the isotherm of 0° C. is drawn heavier than the others; those parts of the globe which are warmer than 0° are colored red, and those colder than 0° are colored blue. Different shades of red and blue are used for different degrees of heat and cold. Isobars are drawn in blue, the isobar of 760 mm. being heavy; those below 760 mm. are broken lines; those above, solid lines. Winds are indicated in the usual way by arrows. The principal meteorological stations the world over are shown; the observatories, and the central stations of the various meteorological services are appropriately emphasized by special symbols.

By an ingenious device the globes can be turned over, while still remaining on their wooden stands, so that the southern latitudes may be readily seen. These globes will help greatly in giving a clearer conception of the actual distribution of temperatures, pressures and winds than can be gained from a study of the ordinary meteorological charts. While the globes are too small for exhibition